REMARKS

Claims 1-11 are rejected. Claims 12-33 are withdrawn from consideration. Claim 1 has been amended. Withdrawn claims 12, 32 and 33 have also been amended to maintain commonality with claim 1. Claims 1-33 are presently pending in the application, with claims 12-33 withdrawn. Favorable reconsideration of the application in view of the following remarks is respectfully requested.

The basis for the amendment of claims 1 and 12, as well as withdrawn claims 32 and 33, is found on pg. lines of the specification as originally filed.

Restriction under 35 USC § 121:

The Examiner has required restriction to one of the following inventions: I. Claims 1-11, drawn to composition, classified in class 546 and subclass 163; II. Claims 12-29, drawn to a microarray, classified in class 435, subclass 7.92; III. Claims 30-31, drawn to a method of making a microarray, classified in class 427, subclass 2.13; IV. Claim 32, drawn to a microsphere comprising a capsule containing a dye of formula (I), classified in class 427 and subclass 2.14; and V. Claim 33, drawn to a microsphere comprising a capsule containing a dye of formula (II), classified in class 427 and subclass 2.14; indicating that the groups represent general areas wherein the inventions are independent and distinct, each from the other because of the following reasons:

Inventions of group I and group II are related as combination and subcombination and, in the instant case, the combination (group II) does not require the particulars of microsphere dye of group I as evidenced by dye of formula (I) and formula (II) of claim 1 and 2 for patentability and the coating composition (subcombination of group I) has separate utility such as a coating in printing media. The Applicants traverse this restriction. Claim 1 is directed to a coating composition for making a protein microarray and claim 12 is directed to a microarray coated with a coating composition for making a protein microarray. The Examiner indicates the coating composition could be used for a different purpose, however, the wording of the claim indicates the coating composition is for making an array. In addition, Claims 1 and 12 both contain the same dye of Formula I. The dye of Formula II is a subset of the dye of Formula I, and is present in dependent claims to both claims 1 and 12. The only difference between

the claims is the presence of a substrate in claim 12. Therefore, the Applicants do not believe that claims 1 and 12 have separate utility, utilize the same dyes. Coextensive searching of the Groups I and IV would not prove seriously burdensome to the Examiner, but would instead be most efficient. Therefore, it is respectfully requested that the Restriction Requirement be reconsidered.

Inventions of group I and group IV are related as combination and subcombination and in the instant case, combination (group I) does not require the particulars of microsphere capsule of claim 32 of group IV as evidenced by dye of formula (II) of claim 33 for patentability and subcombination (group IV) have separate utility such as in printing media. The Applicants traverse this restriction. As discussed above, the dyes of Formula II are a subset of the dyes of Formula I and depend therefrom. Both Groups contain the dyes of Formula I and II in the same dependency relationship. In addition, Claim 32 is related to a microsphere containing a particular dye for making a microarray and claim 1 is for a coating composition for forming a microarray containing a microsphere containing the same dye. The wording of the claims indicates the claims of Group IV are for making an array, not a coating composition in general. Since both claims relate to microspheres containing the same dyes for use in arrays, the Applicants believe the claims do not have separate utility and that coextensive searching of the Groups I and IV would not prove seriously burdensome to the Examiner, but would instead be most efficient. Therefore, it is respectfully requested that the Restriction Requirement be reconsidered.

Inventions of group I and group V are related as combination and subcombination and, in the instant case, combination (group I) does not require the particulars of microsphere capsule of claim 33 of group V as evidenced by dye of formula (I) of claim 32 for patentability and subcombination (group V) have separate utility such as in printing media. The Applicants traverse this restriction. As discussed above, the dyes of Formula II are a subset of the dyes of Formula I. Any search for a dye of Formula I would necessarily produce the dyes of Formula II. Both Groups are directed to a microsphere for use in a microarray which contains, in one case, a dye of Formula I and, in the other case a dye of Formula II, which is a subset of Formula I. In addition, Claim 33 is for a microsphere for making an array and claim 1 is for a coating composition for forming a microarray and, based on the wording of the claim, is not intended for a different

use and therefore do not have separate utility. The Applicants believe that coextensive searching of the Groups I and V would not prove seriously burdensome to the Examiner, but would instead be most efficient. Therefore, it is respectfully requested that the Restriction Requirement be reconsidered.

Inventions of group II and group IV are related as combination and subcombination and, in the instant case, combination (group II) does not require the particulars of microsphere capsule dye of claim 32 of group IV as evidenced by dye of formula (II) of claim 33 for patentability and subcombination (group IV) have separate utility such as in printing media. The Applicants traverse this As discussed above, the dyes of Formula II are a subset of the dyes of Formula I and depend therefrom. Both Groups contain the dyes of Formula I and II in the same dependency relationship. In addition, Claim 32 is related to a microsphere containing a particular dye for making a microarray and claim 12 is directed to a microarray containing the microsphere of claim 32. The wording of the claims indicates the claims of Group IV are for making an array, not a coating composition in general. Since both claims relate to microspheres containing the same dyes for use in arrays, the Applicants believe the claims do not have separate utility and that coextensive searching of the Groups II and IV would not prove seriously burdensome to the Examiner, but would instead be most efficient. Therefore, it is respectfully requested that the Restriction Requirement be reconsidered.

Inventions of group II and group V are related as combination and subcombination and, in the instant case, combination (group II) does not require the particulars of microsphere capsule dye of claim 33 of group V as evidenced by dye of formula (I) of claim 32 for patentability and subcombination (group V) have separate utility such as in printing media. The Applicants traverse this restriction. As discussed above, the dyes of Formula II are a subset of the dyes of Formula I. Any search for a dye of Formula I would necessarily produce the dyes of Formula II. Both Groups are directed to a microsphere for use in a microarray which contains , in one case, a dye of Formula I and, in the other case a dye of Formula II, which is a subset of Formula I. In addition, Claim 33 is for a microsphere for making an array and claim 12 is for a microarray containing the same microsphere and, based on the wording of the claim, is not intended for a different use and therefore do not have separate utility. The Applicants believe

that coextensive searching of the Groups II and V would not prove seriously burdensome to the Examiner, but would instead be most efficient. Therefore, it is respectfully requested that the Restriction Requirement be reconsidered.

Inventions of each of groups I-II and IV-V are related to group III as product and process of making the product and, in the instant case the composition (product) can be used in printing media. The Applicants traverse this restriction. As discussed above, claim 1 of Group I is directed to a composition of a specific dye-containing microsphere for making a microarray and cannot, as worded, have utility in other media. Claim 12 of Group II is directed to a microarray made with the specific dye-containing microsphere of claim 1 for making a microarray. Claim 30 is directed to a method of making a microarray using the specific dye-containing microsphere. Claim 32 of Group IV is directed to the same specific dye-containing microsphere of claim 1 for making a microarray, which has an addition limitation, that is, a capsule. Claim 33 of Group V claims the specific dye-containing microsphere of claim 1 for making a microarray with two additional limitations: a capsule and a more limited dyes sub-set of the specific dye, which still fits within the formula of the specific dye. All of the independent claims relate to a specific dye-containing microsphere for use in a microarray. The microspheres are clearly claimed for use in a microarray, while the remaining independent claims relate to an array and a method of making the array containing the specific dye-containing microsphere. The Applicants believe that the claims are so related as to be commonly searchable and that coextensive searching of the Groups I and IV would not prove seriously burdensome to the Examiner, but would instead be most efficient. Therefore, it is respectfully requested that the Restriction Requirement be reconsidered.

Inventions of groups IV and V are unrelated and patentably distinct and, in the instant case, groups IV requires a dye of formula (I) whereas, group V requires a dye of formula (II) having different substitutions on aromatic ring. The Applicants traverse this restriction. As discussed above, the dyes of Formula II are a subset of the dyes of Formula I. Any search for a dye of Formula I would necessarily produce the dyes of Formula II. Both Groups are directed to a microsphere for use in a microarray which contains , in one case, a dye of Formula I and, in the other case a dye of Formula II, which is a subset of Formula I. The wording of the claims is otherwise identical. The Applicants believe that

coextensive searching of the Groups IV and V would not prove seriously burdensome to the Examiner, but would instead be most efficient. Therefore, it is respectfully requested that the Restriction Requirement be reconsidered.

The Applicant confirms the telephone election with Kathleen Neuner Manne of October 31, 2005 in which the provisional election was made with traverse to prosecute the invention of Group I, claims 1-11. Claims 12-33 are withdrawn from further consideration by the Examiner, 37 CFR 1.142(b), as being drawn to a non-elected invention.

Specification:

The Examiner has objected to the disclosure because of the Application serial Numbers in line 6 and 8 are missing. The specification has been corrected accordingly.

Drawings:

The Examiner has objected to Fig. 1 as not properly labeled. Fig. 1 has been corrected accordingly.

Information Disclosure Statement:

The Examiner has indicated that the listing of references in the specification is not a proper information disclosure statement. 37 CFR 1.98(b) requires a list of all patents, publications, or other information submitted for consideration by the Office, and MPEP j 609 A(1) states, "the list may not be incorporated into the specification but must be submitted in a separate paper." A supplemental Information Disclosure Statement is attached.

Rejection Under 35 USC § 112:

The Examiner has rejected Claims 1-11 under 35 USC § 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which Applicants regard as the invention.

The Examiner indicates that Claim 1 recites the term "precursor to a gelling agent" and it is not clear what compound or compounds are encompassed by the term "precursor to a gelling agent" as the term is not clearly defined in the specification.

MPEP Section 2111.01 indicates that the words of a claim must be given their "plain meaning" unless they are defined in the specification. Ordinary, simple English words whose meaning is clear and unquestionable, absent any indication that their use in a particular context changes their meaning,

are construed to mean exactly what they say. Chef America, Inc. v. Lamb-Weston, Inc., 358 F.3d 1371, 1372, 69 USPQ2d 1857 (Fed. Cir. 2004) Merriam-Webster Online Dictionary indicates that the definition of precursor is a substance, cell, or cellular component from which another substance, cell, or cellular component is formed. Therefore, the term "precursor to a gelling agent" clearly is a substance from which a gelling agent is made.

Further, "plain meaning" refers to the ordinary and customary meaning given to the term by those of skill in the art. The ordinary and customary meaning of a claim term is the meaning that the term would have to a person of ordinary skill in the art in question at the time of the invention, i.e., as of the effective filing date of the patent application." Phillips v. AWH Corp., 75 USPQ2d 1321 (Fed. Cir. 2005) (en banc). The term "precursor to a gelling agent" is a term that appears in patent claims. See U.S. Pat. No. 6,730,515 , Micro-array calibration means, (claim .6.. a gelling agent or precursor to a gelling agent.). Other references utilizing the term "precursor" to a species, without further definition, include U.S. Pat. No. 3,492,250, U.S. Pat. No. 6,805,918 , Laser forward transfer of rheological systems (claims 13, 21, 26, 27, 28, 29... claim 26, wherein the rheology precursor is a primary component of the coating.); U.S. Pat. No. 6,573,089, Method for using and making a fiber array, (claims 7 and 17.. plurality of chemical species precursors on a optical fiber; sequentially ...); U.S. Pat. No. 6,548,308, Focused acoustic energy method and device for generating droplets of immiscible fluids (claim 30.. ceramic material, a precursor to a ceramic material, an amorphous material, or a precursor to a ceramic material.).

Therefore, the Applicants believe that one of ordinary skill in the art would understand what compound or compounds are referred to the term "precursor to a gelling agent". MPEP Section 2182 indicates that the necessity for a patent specification to become a catalogue of existing technology should be avoided. A patent specification need not teach, and preferably omits, what is well known in the art. Hybritech Inc. v. Monoclonal Antibodies, Inc., 802 F.2d 1367, 1384, 231 USPQ 81, 94 (Fed. Cir. 1986).

Rejection Under 35 USC § 112:

The Examiner has rejected Claims 1, 2 and 6-9, which recite the term "microspheres", indicating that the term "microsphere is not clearly defined in the specification and the chemical nature and structure of "microspheres" is not

clear as well. The Examiner notes that "microspheres" by definition are suspensions when dispersed in liquid (source: QTL biosystem). As discussed above, MPEP Section 2111.01 indicates that the words of a claim must be given their "plain meaning" unless they are defined in the specification. Ordinary, simple English words whose meaning is clear and unquestionable, absent any indication that their use in a particular context changes their meaning, are construed to mean exactly what they say. Chef America, Inc. v. Lamb-Weston, Inc., 358 F.3d 1371, 1372, 69 USPQ2d 1857 (Fed. Cir. 2004). The Merriam-Webster Online Dictionary defines microsphere as "a minute sphere". Therefore, the term "microsphere" clearly is a minute sphere.

Further, "plain meaning" refers to the ordinary and customary meaning given to the term by those of skill in the art. The ordinary and customary meaning of a claim term is the meaning that the term would have to a person of ordinary skill in the art in question at the time of the invention, i.e., as of the effective filing date of the patent application." Phillips v. AWH Corp., 75 USPQ2d 1321 (Fed. Cir. 2005) (en banc). MedicineNet.com provides a definition of a Microarray: A tool used to sift through and analyze the information contained within a genome. A microarray consists of different nucleic acid probes that are chemically attached to a substrate, which can be a microchip, a glass slide or a microsphere-sized bead. The definition, which includes "microsphere-sized bead" indicates that one of ordinary skill in the art of microarrays would understand the meaning of the term "microsphere".

This term has also been used in patents claims without specific definition in the specification. See U.S. Pat. No. 6,582,971 ("In addition, the imprinted polymer composites can be used as sensor elements. The composites can be cast into films on a variety of surfaces and used to bind the target biomolecule. The polymer composite may be formed into a sensor selected from a membrane, coating, paint, beads, **microspheres,** or combinations thereof. The presence of the biomolecule on the imprinted surface can be determined by a variety of techniques including spectroscopy, electrochemistry, or microscopy. For example, a change in conductivity of an electronically conducting, imprinted polymer (polypyrrole) composite, such as a composite formed by polymerizing water- soluble pyrrole monomers, is detectable upon binding of the target biomolecule to the surface of the composite.); U.S. Pat. No. 6,200,820 (claim 1.

A particle light scatter-based immunoassay for measuring an analyte in a fluid sample, comprising steps: (a) combining with said fluid sample a reagent set including first binding molecule- coated monodisperse **microspheres** and second binding molecule-coated colloidal particles smaller than said **microspheres,** or an immunocomplex comprising said monodisperse **microspheres** and said colloidal particles, to form a mixture and allow a reaction to occur wherein at least one of said first and second binding molecules binds said analyte, said reaction being formation or decomplexation of said immunocomplex, so that the reacted mixture includes **microspheres** in uncompleted form, in said immunocomplex, or both, wherein the degree of binding of said **microspheres** to the colloidal particles in the reacted mixture, or the degree of decomplexation of the immunocomplex, is dependent upon presence or amount of said analyte in said fluid sample; (b) illuminating the reacted mixture with an incident light source to produce individual light scatter signals for each of said **microspheres;** (c) measuring said light scatter signals; (d) determining a degree of variation of a statistical distribution of the measured light scatter signals from said **microspheres,** such that the degree of variation of said statistical distribution varies with the degree of binding of said **microspheres** with said colloidal particles in said reacted mixture; and (e) correlating said degree of variation of said statistical distribution of said light scatter signals for said **microspheres** in said reacted mixture with the presence or amount of said analyte in said fluid sample. Claim 23. The method of claim 2, further comprising: (f) forming the polymer composite into a sensor selected from a membrane, coating, paint, beads, **microspheres,** or combinations thereof. Claim 47. The method of claim 26, further comprising: (f) forming the polymer composite into a sensor selected from a membrane, coating, paint, beads, **microspheres,** or combinations thereof. Claim 95. The method of claim 74, further comprising: (f) forming the polymer composite into a sensor selected from a membrane, coating, paint, beads, **microspheres,** or combinations thereof.)

This term has also been used in patents specifications without specific definition. See U.S. Pat. No. 5922357 (The term "microsphere" is generally employed to describe a substantially spherical particle having a diameter in the range 10 nm to 2 mm.); U.S. Pat. No. 5,912,016 (Within the framework of the invention, it is thus possible to obtain particles whose dimensions can be adjusted at will from the smallest sizes up to large sizes, i.e.

from nanometer sizes up to large sizes greater than 1 mm, in other words capable of ranging up to about 2 mm or even 3 mm. The invention also includes capsules or spheres, i.e. especially nanocapsules or nanospheres and microcapsules or **microspheres,** in the **definition** of "particles".); U.S. Pat. No. 5,648,096 (The terms **microspheres** or microparticles describe spherical and non-spherical particles in the size range of 1-1,000 [mgr]m, consisting of a polymer matrix, in which the active material is imbedded as a so-called solid solution or suspension.). The term "microsphere" has been in use for a considerable time. See U.S. Pat. No. 4,111,713 (September 5, 1978); U.S. Pat. No. 4,044,176 (August 23, 1977); U.S. Pat. No. 4,006,273 (February 1, 1977); U.S. Pat. No. 3,867,169 (February 18, 1975); U.S. Pat. No. 3,769,126 (October 30, 1973); U.S. Pat. No. 3,736,612 (June 5, 1973); U.S. Pat. No. 3,661,620 (May 9, 1972); U.S. Pat. No. 3,518,328 (June 30, 1970); U.S. Pat. No. 3,379,664 (April 23, 1968); U.S. Pat. No. 2,960,478 (November 15, 1960)

The term "microspheres" is commonly used in patents relating to microarrays. See U.S. Pat. No. 6,947,142 Color detection in random array of microspheres; U.S. Pat. No. 6,916,620, Random array of micro-spheres for the analysis of nucleic acid using enzyme digestion; U.S. Pat. No. 6,942,968, Array compositions for improved signal detection; U.S. Pat. No. 6,914,106, Polymer microspheres containing latent colorants and method of preparation; U.S. Pat. No. 6,858,394, Composite arrays utilizing microspheres; U.S. Pat. No. 6,770,441, Array compositions and methods of making same; U.S. Pat. No. 6,680,211, Fluorescent nanocrystal-embedded microspheres for fluorescence analysis; U.S. Pat. No. 6,548,171, Fluorescent nanocrystal-embedded microspheres for fluorescence analyses; U.S. Pat. No. 6,429,027, Composite arrays utilizing microspheres; U.S. Pat. No. 6,395,278, Prostate specific fusion protein compositions; U.S. Pat. No. 6,355,431, Detection of nucleic acid amplification reactions using bead arrays; U.S. Pat. No. 6,309,701, Fluorescent nanocrystal-labeled microspheres for fluorescence analyses.

In addition, the present specification provides the context which would enable one of ordinary skill in the art to be clear regarding the meaning of the term, structure and composition of the microsphere. ("microsphere or "beads"" (FIELD OF THE INVENTION); "microsphere bead" pg. 4, 5, 6, 21; "microspheres or particles having a substantially curvilinear shape" pg. 14.

Therefore, the Applicants believe that one of ordinary skill in the art would understand what compound or compounds are referred to the term "precursor to a gelling agent". MPEP Section 2182 indicates that the necessity for a patent specification to become a catalogue of existing technology should be avoided. A patent specification need not teach, and preferably omits, what is well known in the art. Hybritech Inc. v. Monoclonal Antibodies, Inc., 802 F.2d 1367, 1384, 231 USPQ 81, 94 (Fed. Cir. 1986).

Rejection Under 35 USC § 112:

The Examiner has rejected Claims 1 and 2, which recite the phrase "microspheres containing a dye", indicating that it is not clear whether the "dye" is attached, adsorbed or absorbed on or into the "microsphere". The Applicants believe that the specification describes "microspheres containing a dye" in a manner that would allow one of ordinary skill in the art to understand the scope of the invention. The following sections of the specification describe the relationship between the dye and the microsphere:

> "*The present invention provides a microarray that is less costly and easier to prepare than those previously disclosed, and further can be used in a colored microarray device such as described herein wherein green light absorbance is desired to be maximized and fluorescence of the dye imbibed in the colored polystyrene microsphere bead is desired to be minimized.*" Pg. 4, lines 12-16.
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> "*The coloration of a polystyrene microsphere bead requires that colorant materials are soluble in an organic solvent mixture that is designed to swell, but not dissolve, the polystyrene microsphere bead. Further,* ***the colorant material must migrate from the solvent mixture into the polystyrene bead rendering the bead with high coloration. Further, the colorant must remain in the microsphere bead during the process of bead filtration, solvent removal and subsequent washing and de-swelling of the polystyrene beads.*** *Organic colorant materials with high solubility in a mixture of acetone and toluene have been found to be most suitable to meet these requirements. In order for the dyes to impart strong coloration to the polystyrene microsphere beads it is also desirable that the colorant materials possess a high extinction coefficient. For the application described herein it is further desirable that the colorant*

material possess the property of no detectable fluorescence upon light exposure when imbibed in a polystyrene matrix. It is further desirable that the colorant materials possess such properties which impart a non-fading color to the polystyrene beads, and that the dye materials be easy to synthesize, and of low cost. " pg. 5, lines 7-22

"*Thus, the dyes of this invention have been found to have good solubility in the organic solvents required for bead coloration, high extinction, and remarkably low fluorescence when imbibed in a polystyrene microsphere bead.*" Pg. 6, lines 3-5

"*We have found that these dyes surprisingly possess the quality of good solubility in solvents suitable for coloring polystyrene beads, and further specifically those dyes which possess alkoxycarbonyl substitution on the quinolinol portion of the dye chromophore have the very desirable property of extremely low fluorescence when imbibed into the polystyrene microsphere beads.*" Pg. 7, lines 9-14.

"*As shown here, the polystyrene micro-spheres have the least fluorescence when imbibed with MD-1.*" Pg. 22, lines 1-2.

The specification also refers to "*the colorant in the bead*" at pg. 20, lines 10 and 13, and pg. 21, line 2. These sections indicate that the microsphere contains the dye, that is, that the dye has penetrated into or been taken into the microsphere. The Applicants believe the phrase "microspheres containing a dye" is adequately described to one of ordinary skill in the art and request the Examiner to reconsider and withdraw the rejection.

Rejection Under 35 USC § 102:

The Examiner has rejected Claims 1-3 and 9-10 under 35 U.S.C. 102(b) as being anticipated by Chen et al (EP 1127707 Al), indicating that Chen et al. disclose a coating composition comprising a dye-containing polymeric latex and gelling agent (e.g. gelatin) and at least one of the nickel metallized dye of the reference anticipates the dyes (formula (I) and formula (II)) of present application.

Chen discloses an ink jet printing method which employs a porous receiver and an ink jet composition which provides improved light and dark stability. The ink jet printing method comprises the steps of A) providing an ink jet printer that is responsive to digital data signals; B) loading the printer with ink-receptive elements comprising a support having thereon a porous ink-

receptive layer; C) loading the printer with an ink jet ink composition comprising a water-dispersible polymeric latex having contained therein a water- insoluble dye; and D) printing on an ink-receptive substrate using the ink jet ink in response to the digital data signals.

The present invention relates to a coating composition for making a protein microarray, the composition comprising a gelling agent or a precursor to a gelling agent, and microspheres; the microspheres containing a low fluorescing dye represented by the Formula (I).

A claim is anticipated only if each and every element as set forth in the claim is found either expressly or inherently described in a single prior art reference. The identical invention must be shown in as complete detail as is contained in the claim.

Chen discloses a coating composition comprising a dye-containing polymeric latex, gelling agent nickel metallized dye of formula (I) and formula (II), however, Chen fails to mention a low fluorescing dye of formula (I) and / or formula (II). In addition, low fluorescence is not an inherent property of the dyes disclosed in Chen. Chen states "A broad range of water-insoluble dyes may be used in the invention such as an oil dye, a disperse dye, a solvent dye, as disclosed in US-A-4,246,154 and US-A-5,852,074, or a metal-complex dye, such as the water-insoluble analogues of those described in US-A-5,997, 622 and US-A-6,001,161, i.e., a transition metal complex of an 8- heterocyclylazo-5-hydroxyquinoline." See [0010] Comparative dyes 1-4 are exemplified as having high fluorescence values (pg. 21, Table I of the present invention) and are outside the scope of the present claims to a low fluorescing dye. These dyes are oleophilic dyes, as evidenced by the description provided in U.S. Pat. No. 4,246,154, col. 2, lines 38-41 ("In accordance with the present invention, finely divided particles of a vinyl polymer impregnated with a hydrophobic dye are dispersed in an aqueous medium in the state of a microemulsion without coagulating. The vinyl polymer is made of up extremely small particles having a diameter of preferably 0.1 micron or less and the stability of ink depends on the stability of vinyl polymer particles in the aqueous medium as opposed to the relatively unstable hydrophobic dye."); see also col. 9, lines 20-24 "In the present invention, azo dyes, metal complex type azo dyes, anthraquinone dyes, phthalocyanine dyes, triarylmethane dyes and other hydrophobic dyes which are

soluble in organic solvents but not water may be employed."; and see also col. 10, lines 14-20 " In addition, oleophilic dyes such as those disclosed in U.S. Pat. Nos. 3,652,284; 3,486,897; 2,751,298 and 3,506,443; Canadian Pat. No. 602,607; U.S. Pat. Nos. 3,443,939; 3,443,940; 3,443,941; 3,725,062; 3, 415,644; 3,415,645; 3,415,646; 3,647,437 and 3,635,707; and Belgian Pat. Nos. 757,959; 757,960; 810,195 and 788,268 may be also employed."). Comparative dye 3 of the present specification is specifically mentioned as a "disperse azo dye" in U.S. Pat. No. 4,968,318 (Bayer A-G). As described in EP127707: Claim 7: "The method of Claim 1 wherein said water-insoluble dye comprises an oil dye, a disperse dye, a solvent dye, or a metal-complex dye." EP127707 makes no distinction between the fluorescence of metal-complex dyes of the presently claimed dye Formula I and disperse dyes, as in comparative dye 3. As a result, the reference fails to anticipate the present claims. The Applicants request that the Examiner reconsider and withdraw the rejection.

Rejection Under 35 USC § 102:

The Examiner has rejected Claims 1-3 under 35 U.S.C. 102(b) as being anticipated by Evans et al (US 4420550), indicating that Evans et al. disclose a coating composition comprising a dye-containing emulsion and gelling agent (e.g. gelatin), at least one of the nickel metallized dye of the reference anticipates the dyes (formula (I) and formula (II)) of present application, and, as discussed above, "microspheres" by definition are suspensions when dispersed in liquid (source: QTL biosystem) and therefore, "emulsion" which is a "suspension" of small globules on one liquid with which the first will not mix, fits the definition of "microspheres".

Evans relates to photography and more particularly to color diffusion transfer photography employing certain nondiffusible magenta dye-releasing compounds which, as a function of development of a silver halide emulsion layer, release a diffusible magenta dye. The dye- releasing compound can be premetallized or a metal complex of the released dye can be formed in an image-receiving layer.

The present invention relates to a coating composition for making a protein microarray, the composition comprising a gelling agent or a precursor to a gelling agent, and microspheres; the microspheres containing a low fluorescing dye represented by the Formula (l).

A claim is anticipated only if each and every element as set forth in the claim is found either expressly or inherently described in a single prior art reference. The identical invention must be shown in as complete detail as is contained in the claim.

Evans discloses a certain nondiffusible magenta dye-releasing compounds which, as a function of development of a silver halide emulsion layer. The Examiner notes that ""microspheres" by definition are suspensions when dispersed in liquid (source: QTL biosystem) and therefore, "emulsion" which is a "suspension" of small globules on one liquid with which the first will not mix, fits the definition of "microspheres"." However, a silver halide "emulsion" is not an emulsion, but is a dispersion. See http://www.cheresources.com/photochem.shtml ("*As already noted, the silver halides used in photography are dispersions of microscopic crystals in a colloidal binder that is usually bone gelatin. Although such dispersions are referred to as emulsions or photographic emulsions, they are really dispersions.*"), included herein as Attachment 1, pg. 3/17, lines 1-4. In addition, the reference is silent with respect to low fluorescing dyes. Since the reference fails to disclose a microspheres, the reference fails to anticipate the present claims. The Applicants request that the Examiner reconsider and withdraw the rejection.

Rejection Under 35 USC § 103:

The Examiner has rejected Claims 1-11 under 35 U.S.C. 103(a) as being unpatentable over Noonan et al. (US 5334575) in view of Evans et al. (US 4420550), indicating that Noonan et al. disclose a coating composition comprising a gelling agent (e.g. gelatin) and microsphere (beads) containing a magenta dye, disclose that the beads size are approximately 0.1 to about 20um, and, although Noonan et al. disclose magenta dye but fail to disclose nickel metallized dye of formula (I) and formula (II) of present application, Evans et al. disclose a coating composition comprising magenta dye of formula (I) and (II) of present application, disclose that the metallized dye have less unwanted absorption that other metallizable dyes (column 1, lines 30-35), and therefore, given the above fact that magenta dye of present application (formula I and II) is know in the art as coating composition and is useful for its less absorptive properties, it would have been obvious at the time of the invention to a person of ordinary skill in the art to substitute equivalent magenta dye of Evans et al in the coating composition

of Noonan et al, with the expectation of obtaining a similarly useful dye-coating composition.

Noonan relates to the use of certain dye-containing beads in the donor element of a laser-induced thermal dye transfer system, specifically a monocolor dye donor element for laser-induced thermal dye transfer comprising a support having thereon a dye layer comprising solid, homogeneous beads which contain an image dye, a binder and a laser light-absorbing material, said beads being dispersed in a vehicle.

Evans relates to photography and more particularly to color diffusion transfer photography employing certain nondiffusible magenta dye-releasing compounds which, as a function of development of a silver halide emulsion layer, release a diffusible magenta dye. The dye- releasing compound can be premetallized or a metal complex of the released dye can be formed in an image-receiving layer.

The present invention relates to a coating composition for making a protein microarray, the composition comprising a gelling agent or a precursor to a gelling agent, and microspheres; the microspheres containing a low fluorescing dye represented by the Formula (I).

To establish a prima facia case of obviousness, there must be some suggestion or motivation in the reference or in the general knowledge available to one skilled in the art to modify the reference, there must be a reasonable expectation of success, and the prior art reference must teach or suggest all the claim limitations.

The references fail to suggest the modification to produce the presently claimed invention. The Examiner admits that Noonan et al. disclose a coating composition comprising a gelling agent, microsphere, and magenta dye but fail to disclose nickel metallized dye of formula (I) and formula (II) of present application. As discussed above, Evans discloses a silver halide "emulsion" which is a dispersion of silver halide particles, not an emulsion, and, hence, not a microsphere. Neither reference mentions low fluorescing dyes of Formula I or II. At best the combination of the references would provide a composition containing a gelling agent, silver halide particles, microspheres and a magenta dye of Formula I or II.

The present invention provides a microarray that is less costly and easier to prepare than those previously disclosed, and further can be used in a colored microarray device such as described herein wherein green light absorbance is desired to be maximized and fluorescence of the dye imbibed in the colored polystyrene microsphere bead is desired to be minimized. The references are silent with respect to the control of fluorescence levels in a microsphere for use in microarrays and therefore provide no likelihood of success in the use or identification of a low fluorescing dye of Formula I. There are a very large number of compounds known to those skilled in the art which may be utilized as dyes. There are, further, a tremendous number of types of microspheres. Microarray systems are very complex and unpredictable and the fact that two technologies are independently successful does not indicate that the combination will be useful or beneficial. As indicated in the present specification, "there are no general guideline parameters with which a colorant scientist may predict the fluorescence of any given colorant material. Therefore, the colorant scientist must undertake an empirical approach to the discovery of colorant materials that are non-fluorescent. It appears that dye materials containing a specific halogen functionality are particularly likely to possess the property of very low fluorescence. Thus, the dyes of this invention have been found to have good solubility in the organic solvents required for bead coloration, high extinction, and remarkably low fluorescence when imbibed in a polystyrene microsphere bead." (pg. 5, line 28 - pg. 6, line 5 of the present specification). At most, the Examiner has set forth an argument that it would be "obvious to try" the combination of the cited references. Therefore, there is no reasonable expectation of success found in any combination of the cited references.

The references fail to include all the limitations of the present claims. There is no mention in either reference or the combination of the two relating to microspheres containing a low fluorescing dye as presently claimed.

The present invention also provides surprising results, as dye materials containing a specific halogen functionality are particularly likely to possess the property of very low fluorescence. As indicated on pg. 21, Table I of the specification, the presently claimed dyes of Formula I are low fluorescing, when compared to other, similar dyes.

In summary, the references fail to suggest, alone or in combination, all the limitations of the present claims, fail to provide a likelihood of success and fail to provide an suggestion to combine or modify the references to produce the presently claimed invention, the Applicants request that the Examiner reconsider and withdraw the rejection.

Rejection Under 35 USC § 103:

The Examiner has rejected Claims 1-11 under 35 U.S.C. 103(a) as being obvious over Qiao et al. (US 6916620) in view of Evans et al. (US 4420550), indicating that Qiao et al disclose a microarray coating composition comprising a gelling agent and microsphere (beads) containing a magenta dye, disclose beads size of 1 to 50 microns, disclose the beads comprising polystyrene, and, although Qiao et al disclose magenta dye but fail to disclose nickel metallized dye of formula (I) and formula (II) of present application, Evans et al. disclose a coating composition comprising magenta dye of formula (I) and (II) of present application, disclose that the metallized dye have less unwanted absorption that other metallizable dyes, and, therefore, given that magenta dye of present application (formula I and II) is know in the art as coating composition and is useful for its less absorptive properties, it would have been obvious at the time of the invention to a person of ordinary skill in the art to substitute equivalent magenta dye of Evans et al in the coating composition of Qiao et al, with the expectation of obtaining a similarly useful microarray coating composition.

Qiao concerns biological microarray technology in with respect to a nucleic acid microarray system and a method of identifying nucleic acid samples comprising: providing a microarray including a substrate coated with a composition including a population of nucleic acid probe modified micro- spheres immobilized in a coating containing a gelling agent or a precursor to a gelling agent, wherein a first portion of the micro- spheres is submerged in the gelatin coating and a second portion is exposed above the gelatin coating and is substantially free of gelatin, at least one sub-population of the population micro-spheres containing an optical barcode generated from at least one colorant associated with the micro-spheres and including a nucleic acid probe sequence; contacting the array with a target nucleic acid sequence; and detecting the color barcode of the sub- population of micro-spheres due to the interaction of the

probe nucleic acid sequence and the fluorescently/chemiluminescently labeled nucleic acid sample target nucleic acid sequence.

Evans relates to photography and more particularly to color diffusion transfer photography employing certain nondiffusible magenta dye-releasing compounds which, as a function of development of a silver halide emulsion layer, release a diffusible magenta dye. The dye- releasing compound can be premetallized or a metal complex of the released dye can be formed in an image-receiving layer.

The present invention relates to a coating composition for making a protein microarray, the composition comprising a gelling agent or a precursor to a gelling agent, and microspheres; the microspheres containing a low fluorescing dye represented by the Formula (l).

To establish a prima facia case of obviousness, there must be some suggestion or motivation in the reference or in the general knowledge available to one skilled in the art to modify the reference, there must be a reasonable expectation of success, and the prior art reference must teach or suggest all the claim limitations.

The references fail to suggest the modification to produce the presently claimed invention. Qiao discloses an assay method relying on the detection of fluorescence or chemiluminescence (Abstract) and specifically exemplifies Dye 1 in col. 10, lines 5-20, utilized in inventive Formulation 1 (col. 9, lines 6-34). Dye 1 is equivalent to Comparative dye 4 of the present invention. As discussed above, Evans discloses a silver halide "emulsion" which is a dispersion of silver halide particles, not an emulsion, and, hence, not a microsphere. Neither reference mentions low fluorescing dyes of Formula I or II. At best the combination of the references would provide a composition containing a gelling agent, silver halide particles, microspheres and a magenta dye of Formula I or II.

The present invention provides a microarray that is less costly and easier to prepare than those previously disclosed, and further can be used in a colored microarray device such as described herein wherein green light absorbance is desired to be maximized and fluorescence of the dye imbibed in the colored polystyrene microsphere bead is desired to be minimized. The references are silent with respect to the control of fluorescence levels in a microsphere for

use in microarrays and therefore provide no likelihood of success in the use or identification of a low fluorescing dye of Formula I. There are a very large number of compounds known to those skilled in the art which may be utilized as dyes. There are, further, a tremendous number of types of microspheres. Microarray systems are very complex and unpredictable and the fact that two technologies are independently successful does not indicate that the combination will be useful or beneficial. As indicated in the present specification, "there are no general guideline parameters with which a colorant scientist may predict the fluorescence of any given colorant material. Therefore, the colorant scientist must undertake an empirical approach to the discovery of colorant materials that are non-fluorescent. It appears that dye materials containing a specific halogen functionality are particularly likely to possess the property of very low fluorescence. Thus, the dyes of this invention have been found to have good solubility in the organic solvents required for bead coloration, high extinction, and remarkably low fluorescence when imbibed in a polystyrene microsphere bead." (pg. 5, line 28 - pg. 6, line 5 of the present specification). At most, the Examiner has set forth an argument that it would be "obvious to try" the combination of the cited references. Therefore, there is no reasonable expectation of success found in any combination of the cited references.

The references fail to include all the limitations of the present claims. There is no mention in either reference or the combination of the two relating to microspheres containing a low fluorescing dye as presently claimed.

The present invention also provides surprising results, as dye materials containing a specific halogen functionality are particularly likely to possess the property of very low fluorescence. As indicated on pg. 21, Table I of the specification, the presently claimed dyes of Formula I are low fluorescing, when compared to other, similar dyes.

In summary, the references fail to suggest, alone or in combination, all the limitations of the present claims, fail to provide a likelihood of success and fail to provide an suggestion to combine or modify the references to produce the presently claimed invention, the Applicants request that the Examiner reconsider and withdraw the rejection.

Rejection Under 35 USC § 103:

The Examiner has rejected Claims 1-11 under 35 U.S.C. 103(a) as being obvious over Qiao et al. (US 2003/0224361 Al) in view of Evans et al. (US 4420550), indicating that Qiao et al disclose a microarray coating composition comprising a gelling agent and microsphere (beads) containing a magenta dye, disclose beads size of 1 to 50 microns, disclose the beads comprising polystyrene and, although Qiao et al disclose magenta dye but fail to disclose nickel metallized dye of formula (I) and formula (II) of present application, Evans et al. disclose a coating composition comprising magenta dye of formula (I) and (II) of present application, disclose that the metallized dye have less unwanted absorption that other metallizable dyes, and , given the fact that magenta dye of present application (formula I and II) is know in the art as coating composition and is useful for its less absorptive properties, it would have been obvious at the time of the invention to a person of ordinary skill in the art to substitute equivalent magenta dye of Evans et al in the coating composition of Qiao et al, with the expectation of obtaining a similarly useful microarray coating composition.

Qiao concerns biological microarray technology in general, particularly, an array of microspheres on a gelatin substrate and a method of exposing the surface of the microspheres to analytes contained in test samples. Preferably, the microspheres bear capture agents (also called probes) on their surfaces. The method of making a microarray comprises providing a support; coating on the support a fluid composition containing microspheres and gelatin; immobilizing the microspheres in the gelatin coating; partially digesting the gelatin with an enzyme to expose surfaces of the microspheres; and removing the enzyme and digested gelatin from the coating.

Evans relates to photography and more particularly to color diffusion transfer photography employing certain nondiffusible magenta dye-releasing compounds which, as a function of development of a silver halide emulsion layer, release a diffusible magenta dye. The dye- releasing compound can be premetallized or a metal complex of the released dye can be formed in an image-receiving layer.

The present invention relates to a coating composition for making a protein microarray, the composition comprising a gelling agent or a precursor to

a gelling agent, and microspheres; the microspheres containing a low fluorescing dye represented by the Formula (I).

To establish a prima facia case of obviousness, there must be some suggestion or motivation in the reference or in the general knowledge available to one skilled in the art to modify the reference, there must be a reasonable expectation of success, and the prior art reference must teach or suggest all the claim limitations.

The references fail to suggest the modification to produce the presently claimed invention. Qiao discloses an assay method relying on the detection of fluorescence or chemiluminescence ([0031])and specifically exemplifies Dye 1 on pg. 4, utilized in inventive Formulation 1 ([0040]-[0044]). Dye 1 is equivalent to Comparative dye 4 of the present invention. As discussed above, Evans discloses a silver halide "emulsion" which is a dispersion of silver halide particles, not an emulsion, and, hence, not a microsphere. Neither reference mentions low fluorescing dyes of Formula I or II. At best the combination of the references would provide a composition containing a gelling agent, silver halide particles, microspheres and a magenta dye of Formula I or II.

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functionality are particularly likely to possess the property of very low fluorescence. Thus, the dyes of this invention have been found to have good solubility in the organic solvents required for bead coloration, high extinction, and remarkably low fluorescence when imbibed in a polystyrene microsphere bead." (pg. 5, line 28 - pg. 6, line 5 of the present specification). At most, the Examiner has set forth an argument that it would be "obvious to try" the combination of the cited references. Therefore, there is no reasonable expectation of success found in any combination of the cited references.

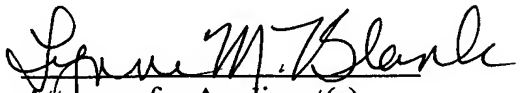
The references fail to include all the limitations of the present claims. There is no mention in either reference or the combination of the two relating to microspheres containing a low fluorescing dye as presently claimed.

The present invention also provides surprising results, as dye materials containing a specific halogen functionality are particularly likely to possess the property of very low fluorescence. As indicated on pg. 21, Table I of the specification, the presently claimed dyes of Formula I are low fluorescing, when compared to other, similar dyes.

In summary, the references fail to suggest, alone or in combination, all the limitations of the present claims, fail to provide a likelihood of success and fail to provide an suggestion to combine or modify the references to produce the presently claimed invention, the Applicants request that the Examiner reconsider and withdraw the rejection.

It is believed that the foregoing is a complete response to the Office Action and that the claims are in condition for allowance. Favorable reconsideration and early passage to issue is therefore earnestly solicited.

Respectfully submitted,



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Enclosures: Replacement Figures 1-3
Copies of Formal Drawings

If the Examiner is unable to reach the Applicant(s) Attorney at the telephone number provided, the Examiner is requested to communicate with Eastman Kodak Company Patent Operations at (585) 477-4656.

Amendments to the Drawings:

The attached sheets of drawings replaces the original Figures 1-3. Formal drawings are submitted herewith which incorporate the changes required by the Examiner. Approval by the Examiner is respectfully requested.

Attachment: Replacement Figures 1-3